

flange 62 for engaging the capsular wall posterior to the zonular fibers. Flange 62 continuously surrounds edge 60 of the skirt 56 and thus uniformly contacts the posterior capsule wall.

FIGS. 11 and 12 illustrate a further modification of the lens design. Haptic 64 is mounted on optic 22d at the side marginal edge 30d into mounting aperture 66. Optic 22d is similar in construction to optics 20-20c except that mounting aperture 34d is located on the side marginal edge 30d of optic 22d. Haptic 64 presents an S-shaped segment 68 which depends posteriorly from the side marginal edge 30d of optic 22d. The S-shaped segment 68 provides additional biasing capability. As shown in FIGS. 11 and 12, haptic 64 continues from S-shaped segment 68 into radial stretch 42d, bend 44d and biasing reach 46d to terminus 48d, as in the haptics shown in FIGS. 1-5, 8 and 9.

Returning to FIGS. 1 through 4, intraocular lens 20 substitutes both locationally and functionally for the original, natural, crystalline lens. An ophthalmic surgeon makes incisions both in the cornea and the anterior wall of the capsule to implant the lens in the eye. Haptics 24 are compressed against optic 22 to permit entry through the smallest possible incision in the cornea and capsule. During this procedure, a surgical instrument grasps the lens 20 by receptacles 32 for placement and positioning within the capsule. The surgeon then closes the entrance incision and correctly positions the haptics 24, engaging the biasing reaches 46 against the posterior wall of the capsule and posterior to the anterior surface 26 of optic 22. Haptics 24 therefore bias the optic 22 against the anterior wall of the capsule. Biasing reach 46 of haptic 24 shown in FIGS. 1 through 5, 8, 9, 11 and 12 extends from radial stretch 42 and engage the posterior capsule wall opposite the zonular fibers. Thus haptics 24 accomplish both a centering and biasing function. In the alternate embodiment shown in FIG. 10, skirt 56 extends radially and posteriorly from optic 22c until skirt margin 60 contacts the capsule wall opposite the zonular fibers. Flange 62 thus engages the posterior wall of the capsule adjacent the zonular fibers and maintain optic 22c in its proper location, biasing it against the anterior wall of the capsule. Both biasing reach 46 and edge 60 engage the capsule posterior to the anterior surface 26 and in the preferred embodiment remain posterior to the posterior surface 28 of optic 22.

Implantation of the present lens 20 restores normal vision because not only does the lens 20 replace the patient's occluded natural lens, but the normally ciliary muscle responses cooperate with the lens 20 during focusing. In FIG. 1, the focal length between the posterior surface 28 of the optic 22 and the fovea is greater to permit viewing of nearby objects. The focal length is greater because the ciliary muscle has contracted, mak-

ing the capsule more spheroid and permitting the optic 22 to move anteriorly. The lens of the present construction thus follows the eye's natural physiology for focusing to provide a substitute means of optical accommodation. When the object under observation becomes more distant, the sensory cells within the retina signal the ciliary muscle to relax, thus pulling on the zonular fibers to make the capsule more discoid. In so doing, the horizontal depth of the capsule is narrowed and skirt 56 or the haptics 24 are loaded. Because the haptics 24 bias the optic 22 in an anterior direction, the haptics 24 or skirt 56 load as they yield to permit the optic 22 to move posteriorly as the capsule becomes more discoid. The focal length between the posterior surface 28 of the optic 22 and the fovea is thus shortened, and the object remains in focus. If the object under observation reapproaches the eye, the ciliary muscles contract, lessening, tension on the zonular fibers. Haptics 24 or skirt 56 then unload and urge optic 22 forward against the anterior face of the capsule wall. The focal length between the posterior surface 28 of the optic 22 and the fovea is thus increased, and the object remains in focus.

I claim:

1. An intraocular lens having focusing capabilities for implantation entirely within the confines of the capsule of a human eye between the anterior and posterior capsule walls, the eye also having a fovea behind said capsule, a ciliary muscle disposed about the capsule, and zonular fibers interposed between the ciliary muscle and capsule, said lens comprising:

an optic presenting an anterior surface, a posterior surface, and a side marginal edge; and positioning means operably coupled with said optic, extending posteriorly of said posterior surface of the optic and outwardly of said marginal edge thereof, and presenting an outboard capsule-engaging portion spaced posteriorly of said optic anterior surface, said capsule-engaging portion including a structure for continuous anterior biasing of said optic such that the optic anterior surface is in constant, biased engagement with said anterior capsule wall at all times during operation of the lens, said positioning means comprising an arcuate in cross section skirt extending posteriorly and radially outwardly from said optic, the outer margin of said skirt lying in one plane, there being a flange extending posteriorly from the edge of said skirt's margin.

2. The lens of claim 1, said optic presenting a convex anterior surface.

3. The lens of claim 1, said skirt being formed of yieldable synthetic resin material.

4. The lens of claim 1, said skirt being a continuous circumscribing member surrounding said optic.

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